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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/743,933	02/14/2001	Ian Bottomley	CM1831M	9058

27752 7590 04/08/2004

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EXAMINER

ZANELLI, MICHAEL J

ART UNIT

PAPER NUMBER

3661

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/743,933

Applicant(s)

BOTTOMLEY ET AL.

Examiner

Michael J. Zanelli

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-20, 22-24 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This is responsive to the amendment filed 12/3/03. Claims 1-11 have been cancelled. Claims 12-24 have been newly added.
2. Acknowledgement is made of the receipt of the IDS filed 7/3/01. If applicant wishes these references as well as the references cited in the foreign search report to be considered and cited on the issued patent, then a PTO-1449 must be submitted (37 CFR 1.98). To date a PTO-1449 has not been received.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 12-15, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (5,998,953).
 - A. As per claim 12, Fig. 4 of Nakamura shows power supply (20); traction mechanism to move robot over trackless surface (3a,b); dispense mechanism to deposit fluent on the surface (22); plurality of navigation sensors (79a,b; 78; 6); at least one deposition detector (73); and control system (12).
 - B. As per claims 13-15, as noted above Nakamura includes sensor (6) to detect obstacles in the environment around the robot and liquid detection sensor (73) to detect liquid dispensed on the surface.
 - C. As per claim 20, as shown in Fig. 4 the traction mechanism includes left and right traction motors.

- D. As per claim 22, the robot disclosed by Nakamura and shown in Fig. 4 functions to treat floor coverings in an autonomous manner and senses and controls dispensing of fluent material on the floor covering (col. 4, lines 1-37).
5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. in view of Nakanishi (5,815,880).
- A. As per claim 23, the claimed invention sets forth various deposited fluent material which may be used with the robot defined in claim 12. Nakamura specifically uses wax as the deposited material since the robot is being used to wax floor surfaces. However, one of ordinary skill in the art would have readily recognized that the teachings of Nakamura could be applied to other types of treatable surfaces.
- B. It was known in this particular art to provide autonomous robots to perform various cleaning functions on different types of treatable surfaces. For example, Nakanishi discloses an autonomous cleaning robot which may include dispensing fluids such as detergents, disinfectant and waxing solution whereby the type of fluid dispensed would have been a function of the treatable surface (see col. 2, line 66 to col. 3, line 3). It would have been obvious to one of ordinary skill in this art to modify the robot of Nakamura to dispense other fluent material as claimed whereby it was known in the art to use autonomous robots to perform various surface treating functions as exemplified by Nakanishi.
6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. in view of Azumi et al. (5,622,236).

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A. As per claim 24, the claimed invention includes a marker in the deposited material which may be detected by the robot defined in claim 12. Nakamura specifically uses a liquid detection sensor to detect the deposited material as the robot traverses the surface. However, one of ordinary skill in the art would have readily recognized that other means of detecting the deposited material could be used in conjunction with the robot disclosed by Nakamura.

B. For example, Azumi discloses an autonomous robot for cleaning a floor surface (Abs.). In particular, Azumi discloses mixing a luminous material (i.e. marker) with the dispensed material to aid the robot in performing its cleaning function. One of ordinary skill in the art would have found it obvious to use this alternative means of detecting the dispensed material in the robot of Nakamura whereby the marker would have enabled the robot of Nakamura to detect the dispensed material.

7. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. in view of Sekiguchi et al. (publ.).

A. As per claims 16-19, Nakamura is applied as above. Claims 16-19 address the processing architecture of the control system of the robot, in particular the use of neural networks to perform hierarchical instructions. At the time of applicant's invention it was known in the robotic arts to use multi-hierarchical neural networks to control the functions of a robot. For example, Sekiguchi teaches how such networks are used to process input information (i.e. sensors) and to adapt the operation of the robot to its environment. One of ordinary skill in the art would have found it obvious to apply the teachings of Sekiguchi to the robot of Nakamura because it would have provided a

control structure in which the robot could readily adapt its operation to its changing environment.

8. Claim 21 is distinguishable over the prior art whereby higher-level functions of impact recognition, room size estimation, clutter level determination and battery monitoring are performed by one or more microprocessor controllers or microcontrollers onboard the robot.

9. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

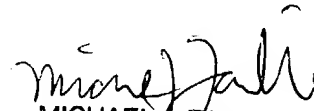
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Zanelli whose telephone number is (703) 305-9756. The examiner can normally be reached on Monday-Thursday 5:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (703) 305-8233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/mjz


MICHAEL J. ZANELLI
PRIMARY EXAMINER